IN THE CLAIMS

1. (Currently Amended) An anastomotic connector for connecting a graft to a target vessel, comprising:

a radially-thin collar section, adapted to surround ~~engage~~ a portion of the graft; and

a separate spike section, adapted to mount on said collar section and comprising a plurality of spikes, each of said spikes adapted to transfix said graft and penetrate said target vessel.

2. (original) A connector according to claim 1, comprising at least one locking element for interlocking said spike section and said collar section.

3. (original) A connector according to claim 2, wherein said locking element is formed on said collar portion.

4. (original) A connector according to claim 3, wherein said locking element mates with an aperture defined by said spike section.

5. (cancelled)

6. (original) A connector according to claim 1, wherein said spike section comprises a super-elastic material.

7. (original) A connector according to claim 1, wherein said spikes are pre-bent in a hook shape, such that said hook shape is adapted to engage the target vessel.

8. (Currently Amended) A connector according to claim 1, wherein said collar element ~~comprises~~ connects to a plurality of flange elements proximal to said target vessel.

9. (original) A connector according to claim 8, wherein said flange elements define apertures for said spike elements to pass through.

10. (original) A connector according to claim 9, wherein said flange elements include at least one opening in their perimeter, wide enough for one of said spikes to be brought in through.

11. (original) A connector according to claim 1, wherein said collar section defines a cylindrical volume.

12. (original) A connector according to claim 1, wherein said collar section is adapted to form a perpendicular anastomosis.

13. (original) A connector according to claim 1, wherein said collar section is adapted to form an oblique anastomosis.

14. (Currently Amended) An anastomotic connector for connecting a graft to a target vessel, comprising:

a base for ~~engaging~~ surrounding said graft;

a plurality of spikes for transfixing said graft and engaging said target vessel; and

at least one spring element attached to at least one of said spikes, which spring element couples a connection between said spike and said base and allows resilient motion of said spike along an axis of said base.

15. (original) A connector according to claim 14, wherein said spikes and said base form a single element.

16. (original) A connector according to claim 14, wherein said spikes and said base form two separate elements.

17. (original) A connector according to claim 14, wherein said spring comprises a flat coil spring.

18. (original) A connector according to claim 14, wherein said spring comprises a leaf spring.

19. (original) A connector according to claim 14, wherein said at least one spring comprises at least two springs in series.

20. (cancelled)

21. (original) A connector according to claim 14, wherein said connector is configured for performing an oblique anastomosis.

22. (original) A connector according to claim 14, comprising at least one tab associated with one spike of said spikes, for moving said spike.

23-73. (cancelled)

74. (new) A connector according to claim 1, wherein the thin collar section does not fasten the graft on its own.

75. (new) A connector according to claim 1, wherein the separate spike section comprises a ring to which the plurality of spikes are attached and wherein the graft is not caught between the ring and the collar section.

76. (new) A connector according to claim 1, wherein the thin collar section engages the graft.

77. (new) A connector according to claim 2, wherein said locking element provides a spring-action, which action resists relative motion axial between at least part of said spike section and at least part of said collar section, with a force dependent on the range of motion.

78. (new) A connector according to claim 14, wherein, each of said spikes has at least one independent associated spring.

79. (new) A connector according to claim 22, wherein said tab is adapted for retracting said spike.

80. (new) A connector according to claim 22, wherein said tab is adapted for advancing said spike.

81. (new) An anastomosis connector, comprising:

a ring shaped base having an axis;

at least one plurality of spikes on one side of said ring wherein said spikes are adapted to not penetrate a graft on which said connector is mounted prior to being attached to a target vessel; and

at least one transaxial thickening in at least one of said spikes, distanced from said ring.

82. (new) A connector according to claim 81, comprising a second plurality of spikes pointing in an opposite direction from said first set of spikes.

83. (new) A connector according to claim 81, wherein said thickening comprises a point where said spike splits into tines.

84. (new) A connector according to claim 83, wherein said tines are shorter than a thickness of a target blood vessel for which the connector is designed.

85. (new) A connector according to claim 81, wherein said at least one plurality of spikes do not apply radial pressure towards or away from said ring, once deployed.

86. (new) A method of containing and releasing an anastomotic connector having a thickening, comprising:

containing said connector between two tubes, said thickening being constrained from axial motion by at least one protrusion defined on at least one of said tubes; and

removing at an outer one of said tubes, such that the connector deforms and the thickening is not constrained by said at least one protrusion.

87. (new) A method of performing an anastomosis between a graft and a target vessel, comprising:

inserting an anastomosis connector into the target vessel;

releasing at least one forward spike of said connector;

retracting said connector such that said forward spike engages said target vessel; and

completing said anastomosis.

88. (new) A method according to claim 87, wherein completing said anastomosis comprises releasing at least one backward spike of said connector to engage said target vessel.

89. (new) A method according to claim 87, wherein completing said anastomosis comprises locking said spike to a part of said connector other than said spike.

90. (new) A method according to claim 87, wherein completing said anastomosis comprises releasing said spike to retract towards a part of said connector other than said spike.

91. (new) A kit for a bypass procedure, comprising:

at least one graft having anastomosis connectors mounted on two ends thereof, said graft and said connectors adapted for a peripheral bypass procedure; and

at least one guide wire attached to one end of said graft.

92. (new) A kit according to claim 91, wherein said connectors are embedded in said ends of said graft.

93. (new) A method of heat-treating an anastomosis connector, comprising:

fitting a cut connector into a mold;

fixing said mold to bend both forward and backwards spikes of said connector into a desired configuration; and

heat-treating said fixed connector, thereby training it to said configuration.

94. (new) A method of connecting a graft to a target vessel, comprising:

surrounding a portion of the graft with a thin collar section;

mounting a separate spike section on the collar section, such that the spikes of the spike section transfix the graft and penetrate the target vessel; and

moving the spike section relative to the graft, so as to connect the vessel to the graft.

95. (new) A method according to claim 94, wherein moving the spike section comprises retracting the spike section.

96. (new) A method according to claim 94, wherein moving the spike section comprises moving relative to the collar section.

97. (new) An anastomotic connector for connecting a graft to a target vessel, comprising:

a plurality of spikes adapted to transfix a graft and penetrate a blood vessel;

a plurality of aperture elements defining apertures adapted to receive the spike elements; and

at least one lock element which locks against at least one of the spikes, so as to limit movement of the spike relative to at least one of the aperture elements, while the spike transfixes the graft and penetrates the blood vessel.

98. (new) A connector according to claim 97, wherein the at least one lock element comprises a lock element corresponding to each aperture.

99. (new) A connector according to claim 97, wherein the at least one lock element is mounted on a collar section connecting the aperture elements.

100. (new) A connector according to claim 99, wherein the collar section has an open structure which substantially reduces the amount of material of the connector.

101. (new) A connector according to claim 97, wherein at least one of the lock elements is mounted on an aperture element.

102. (new) A connector according to claim 97, wherein the locking of the at least one lock element allows some movement of the spike tips relative to each other.

103. (new) A connector according to claim 97, wherein the locking of the at least one lock element allows some motion of the spikes relative to the aperture elements.

104. (new) A connector according to claim 102, wherein the motion of the spikes relative to the aperture elements can accommodate variations in tissue geometry of the target vessel.

105. (new) A connector according to claim 97, wherein the at least one lock element comprises an elastic material.

106. (new) A connector according to claim 97, wherein the spikes are axially elastic.

107. (new) A connector according to claim 97, wherein the at least one lock element locks by mating with an aperture.

108. (new) A connector according to claim 97, wherein once the lock element is locked it does not open by itself.

109. (new) A connector according to claim 97, wherein the locking of the locking element is achieved by retraction of the spikes.

110. (new) An anastomotic connector for connecting a graft to a target vessel, comprising:

a plurality of spikes adapted to transfix a graft and penetrate a blood vessel;

a plurality of aperture elements defining apertures adapted to receive the spike elements; and

at least one lock element on at least one of the aperture elements, which, when locked, limits movement of at least one of the spikes relative to at least one of the aperture elements, while the spikes transfix the graft and penetrate the blood vessel.

111. (new) A connector according to claim 110, wherein the at least one lock element comprises a lock element corresponding to each aperture.

112. (new) A connector according to claim 110, wherein the lock elements lock against the spikes.

113. (new) A connector according to claim 110, wherein the locking of the at least one lock element allows some motion of the spikes relative to the aperture elements.

114. (new) A connector according to claim 113, wherein the locking of the at least one lock element allows some axial motion of the spikes relative to the aperture elements.

115. (new) A connector according to claim 113, wherein the motion of the spikes relative to the aperture elements can accommodate variations in tissue geometry of the target vessel.

116. (new) A connector according to claim 110, wherein the at least one lock element comprises an elastic material.

117. (new) A connector according to claim 110, wherein the spikes are axially elastic.

118. (new) A connector according to claim 110, wherein the at least one lock element locks by mating with an aperture associated with at least one of the spikes.

119. (new) A connector according to claim 110, wherein once the lock element is locked it does not open by itself.

120. (new) A connector according to claim 110, wherein the locking of the lock element is achieved by retraction of the spikes.

121. (new) An anastomotic connector for connecting a graft to a target vessel, comprising:

a plurality of spikes adapted to transfix a graft and penetrate a blood vessel;

a plurality of aperture elements defining apertures adapted to receive the spike elements; and

a plurality of lock elements, each lock element corresponding to an aperture element, which, when locked, limit movement of at least one of the spikes relative to the corresponding aperture element, while the spikes transfix the graft and penetrate the blood vessel.

122. (new) A connector according to claim 121, wherein the lock elements lock against the spikes.

123. (new) A connector according to claim 121, wherein the locking of the plurality of lock elements allows some motion of the spikes relative to the aperture elements.

124. (new) A connector according to claim 123, wherein the locking of the plurality of lock elements allows some axial motion of the spikes relative to the aperture elements.

125. (new) A connector according to claim 123, wherein the motion of the spikes relative to the aperture elements can accommodate variations in tissue geometry of the target vessel.

126. (new) A connector according to claim 121, wherein the spikes are axially elastic.

127. (new) A connector according to claim 121, wherein once the lock element is locked it does not open by itself.

128. (new) A connector according to claim 121, wherein the locking of the lock element is achieved by retraction of the spikes.

129. (new) A method of connecting a graft to a target vessel, comprising:

inserting a plurality of spikes through a plurality of apertures defined by aperture elements;

transfixing a graft by the plurality of spikes;

penetrating a blood vessel by the spikes; and

locking at least one lock element against at least one of the spikes, so as to limit movement of the at least one spike relative to at least one of the aperture elements.

130. (new) A method according to claim 129, wherein the locking of the at least one lock element is achieved by retracting the at least one of the spikes.

131. (new) A method according to claim 129, wherein the locking of the at least one lock element allows some movement of the spike tips relative to each other.

132. (new) A method according to claim 129, wherein the at least one lock element is mounted on a collar section connecting the aperture elements.

133. (new) A method according to claim 132, wherein the collar section has an open structure which substantially reduces the amount of material of the connector.

134. (new) A method according to claim 129, wherein the spikes penetrate the blood vessel, after the spikes are inserted into the apertures.

135. (new) A method of connecting a graft to a target vessel, comprising:

inserting a plurality of spikes through a plurality of apertures defined by aperture elements;

transfixing a graft by the plurality of spikes;

penetrating a blood vessel by the spikes; and

locking at least one lock element which is situated on at least one of the aperture elements, so as to limit movement of at least one of the spikes relative to at least one of the aperture elements.

136. (new) A method according to claim 135, wherein the locking of the at least one lock element is achieved by retracting the at least one of the spikes.

137. (new) A method according to claim 135, wherein the locking of the at least one lock element allows some movement of the spike tips relative to each other.

138. (new) A method according to claim 135, wherein the locking of the at least one lock element allows some motion of the spikes relative to the aperture elements.

139. (new) A method according to claim 135, wherein the at least one lock elements are elongate.

140. (new) A connector according to claim 135, wherein the at least one lock element locks by mating with an aperture associated with at least one of the spikes.

141. (new) A method according to claim 135, wherein the spikes penetrate the blood vessel, after the spikes are inserted into the apertures.

142. (new) A method of connecting a graft to a target vessel, comprising:

inserting a plurality of spikes through a plurality of apertures defined by aperture elements;

transfixing a graft by the plurality of spikes;

penetrating a blood vessel by the spikes; and

locking at least one lock element by retracting at least one of the spikes, so as to limit movement of at least one of the spikes relative to at least one of the aperture elements.

143. (new) A method according to claim 142, wherein the locking of the at least one lock element allows some movement of the spike tips relative to each other.

144. (new) A method according to claim 142, wherein the spikes penetrate the blood vessel, after the spikes are inserted into the apertures.

145. (new) A method of connecting a graft to a target vessel, comprising:

inserting a plurality of spikes through a plurality of apertures defined by aperture elements;

transfixing a graft by the plurality of spikes;

penetrating a blood vessel by the spikes, after the spikes are inserted into the apertures; and

locking at least one lock element, so as to limit movement of at least one of the spikes relative to at least one of the aperture elements.

146. (new) A method according to claim 145, wherein the locking of the at least one lock element allows some movement of the spike tips relative to each other.

147. (new) An anastomotic connector for connecting a graft to a target vessel, comprising:

a plurality of spikes adapted to transfix a graft and penetrate a blood vessel;

a plurality of aperture elements defining apertures adapted to receive the spike elements, while they transfix the graft and penetrate the blood vessel; and

at least one movement restricting element which is adapted to be moved into a fixation state after the spikes transfix the graft and penetrate the blood vessel,

wherein, in the fixation state, the movement of at least one of the spikes is limited relative to at least one of the aperture elements, while some movement of the spike tips relative to each other is allowed in the fixation state.

148. (new) A connector according to claim 147, wherein the movement restricing element comprises a lock element.

149. (new) A connector according to claim 147, wherein the connector has an open structure.

150. (new) A connector according to claim 147, wherein in the fixation state, the movement restricting element allows some motion of the spikes relative to the aperture elements.

151. (new) A connector according to claim 147, wherein in the fixation state, the movement restricting element allows some axial motion of the spikes relative to the aperture elements.

152. (new) An anastomotic connector for connecting a graft to a target vessel, comprising:

a plurality of spikes adapted to transfix a graft and penetrate a blood vessel; and

a plurality of aperture elements defining apertures adapted to receive the spike elements, while they transfix the graft and penetrate the blood vessel,

wherein the connector has an open structure, which substantially reduces the amount of material of the connector, between the aperture elements.

153. (new) A connector according to claim 152, wherein the connector has a mesh construction between the aperture elements.

154. (new) A connector according to claim 152, wherein the aperture elements are included in a two-dimensional annular ring shape which has free space between each two adjacent aperture elements.

155. (new) A connector according to claim 152, wherein the plurality of aperture elements include radial openings.

156. (new) A connector according to claim 155, wherein the radial openings comprise side openings.

157. (new) A connector according to claim 152, wherein the spikes have tips adapted to lock against the aperture elements.

158. (new) A method of connecting a graft to a target vessel, comprising:

providing a plurality of apertures defined by aperture elements in an annular ring shaped two-dimensional space around a graft, which has free space between each two adjacent aperture elements;

inserting a plurality of spikes through the apertures;

transfixing the graft by the plurality of spikes; and

penetrating a blood vessel by the spikes.

159. (new) A method according to claim 158, comprising locking at least one lock element which, when locked, limits movement of the plurality of spikes relative to at least one of the aperture elements.